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Holley, Jr. et al.

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(54) **CARTON WITH ARTICLE PROTECTION FLAP**

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See application file for complete search history.

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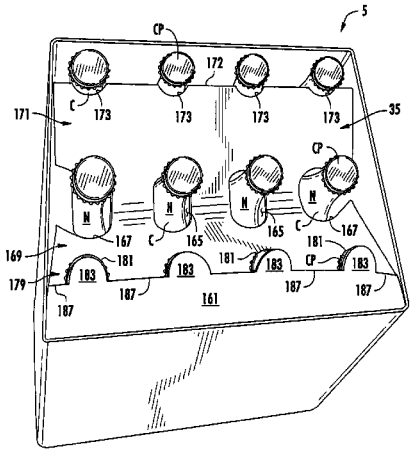
(57) **ABSTRACT**

A carton for containing at least one article. The carton comprises a plurality of panels at least partially forming an interior of the carton. The plurality of panels comprises a top panel. The carton comprises an article protection flap foldably connected to at least one panel of the plurality of panels. The article protection flap is moveable between a first position that is substantially parallel to the top panel and a second position wherein the article protection flap is folded relative to the top panel. The at least one access feature in the top panel is for positioning the article protection flap from the first position to the second position.

35 Claims, 10 Drawing Sheets



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WO	WO 2011/022145	A1	2/2011
WO	WO 2011/049947	A1	4/2011

* cited by examiner

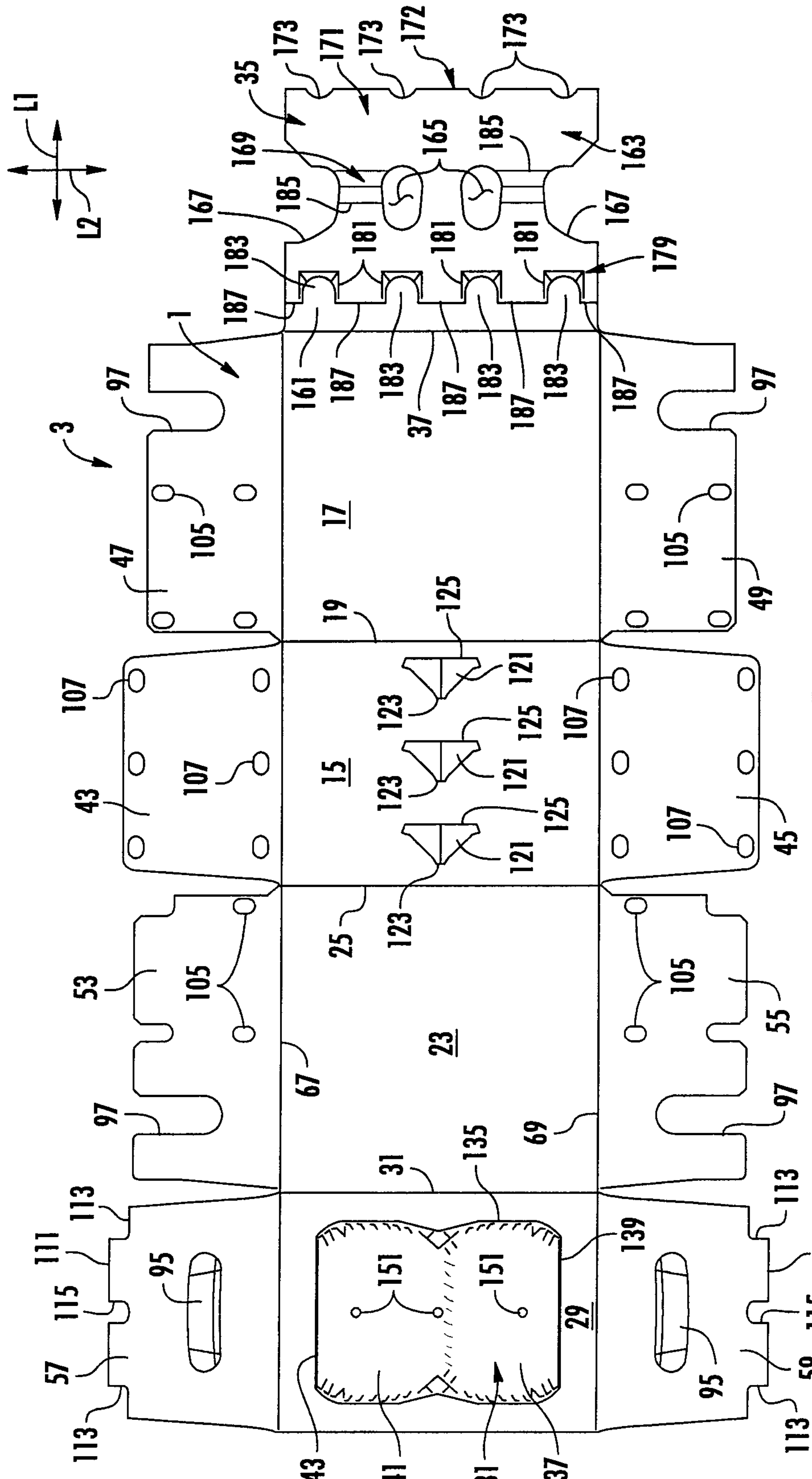

FIG. 1

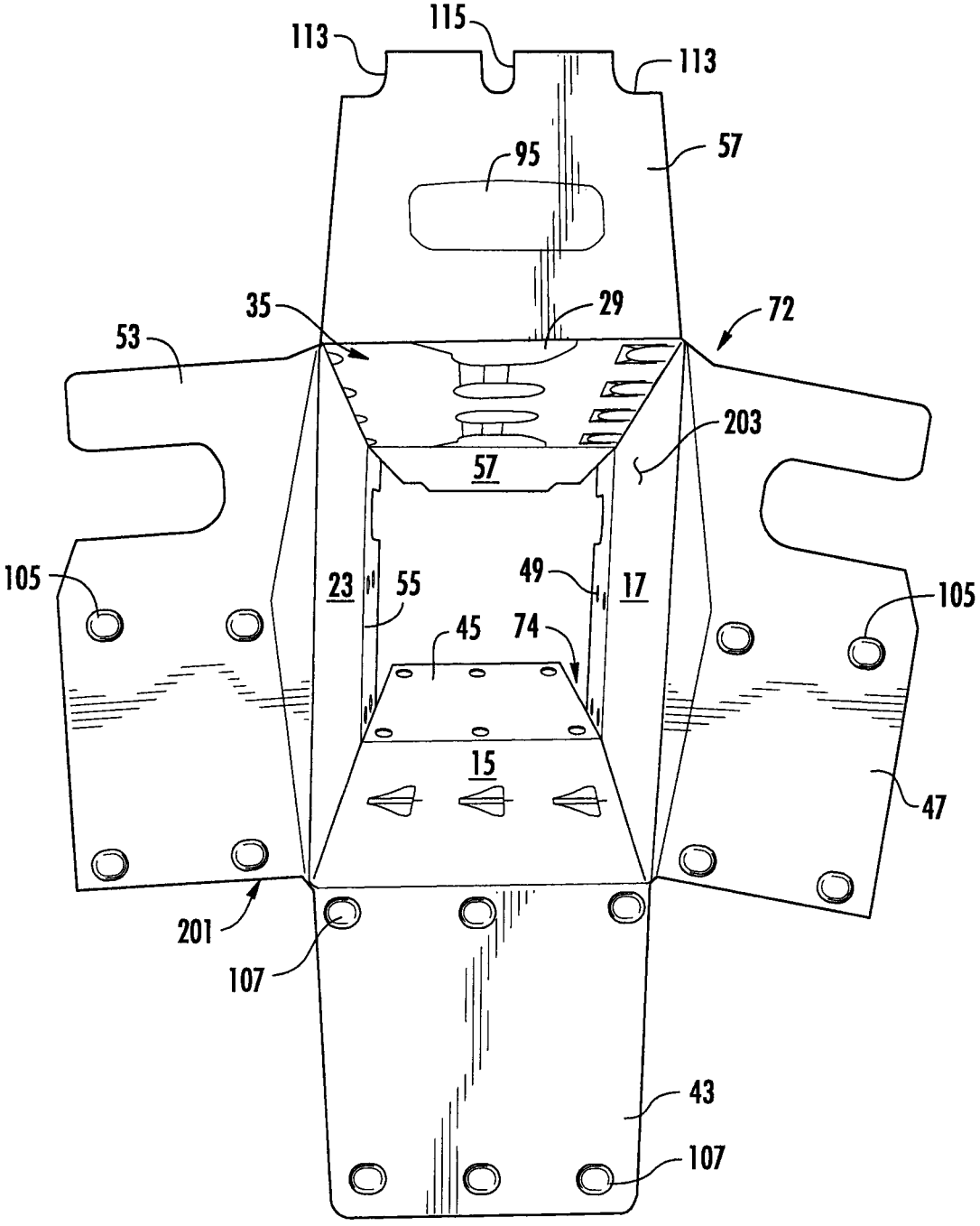
113
115
113
57
95
35
29
72
53
203
57
105
23
55
49
17
105
45
74
15
47
201
107
43
107

FIG. 2

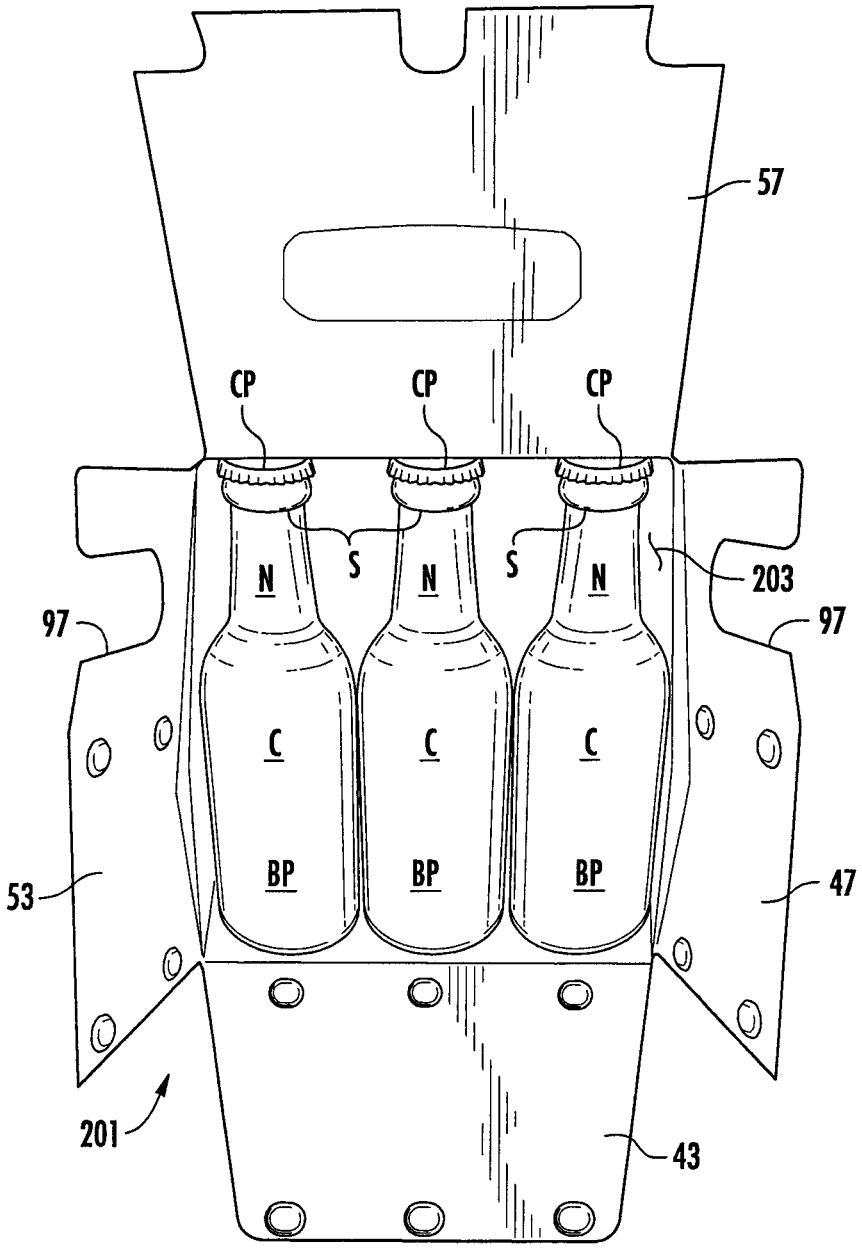

FIG. 3

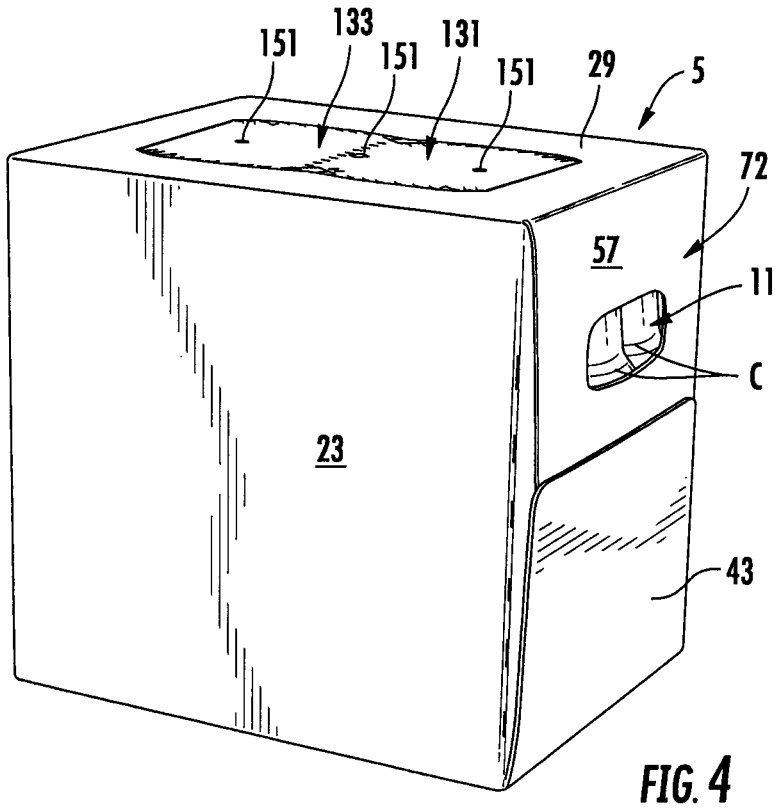
151
133
151
131
151
29
5
72
57
11
C
23
43

FIG. 4

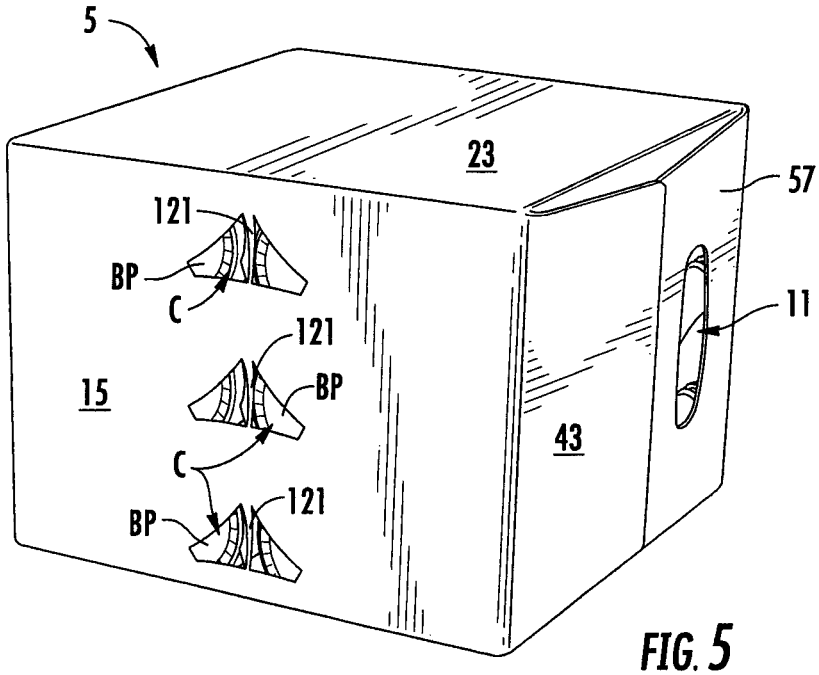
5
23
57
121
BP
C
11
121
15
BP
C
43
BP
121

FIG. 5

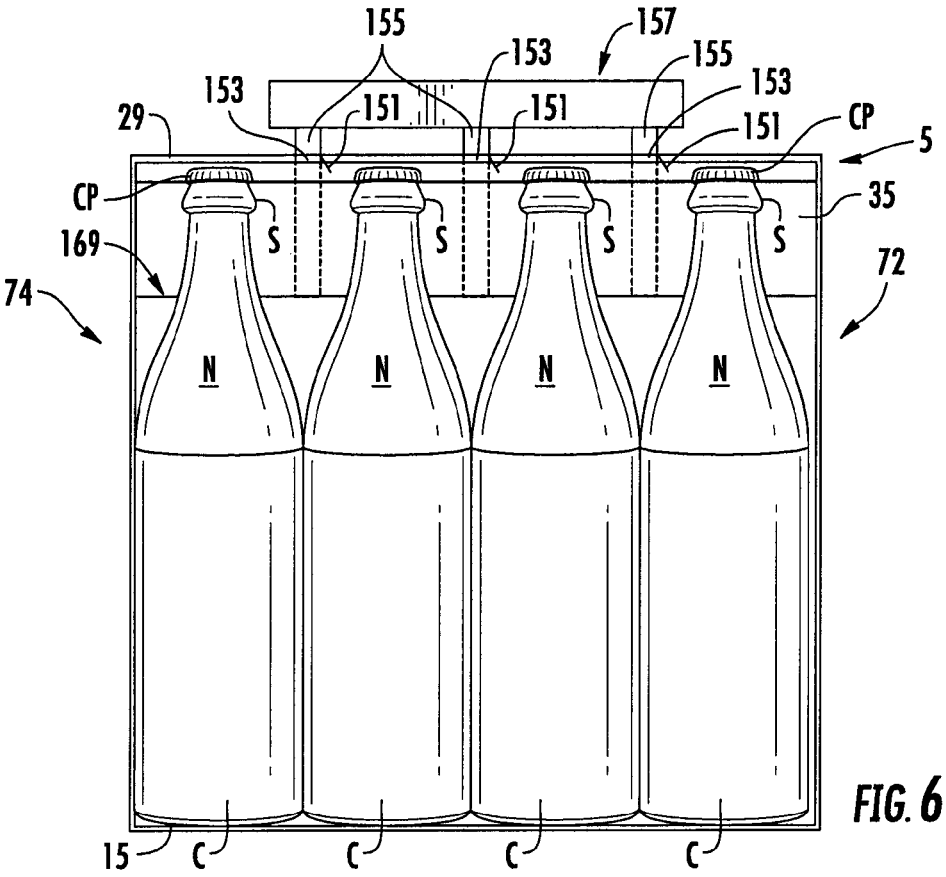
155
157
153
155
153
153
151
151
151
29
CP
5
CP
35
S
S
S
S
169
72
74
N
N
N
N
15
C
C
C
C

FIG. 6

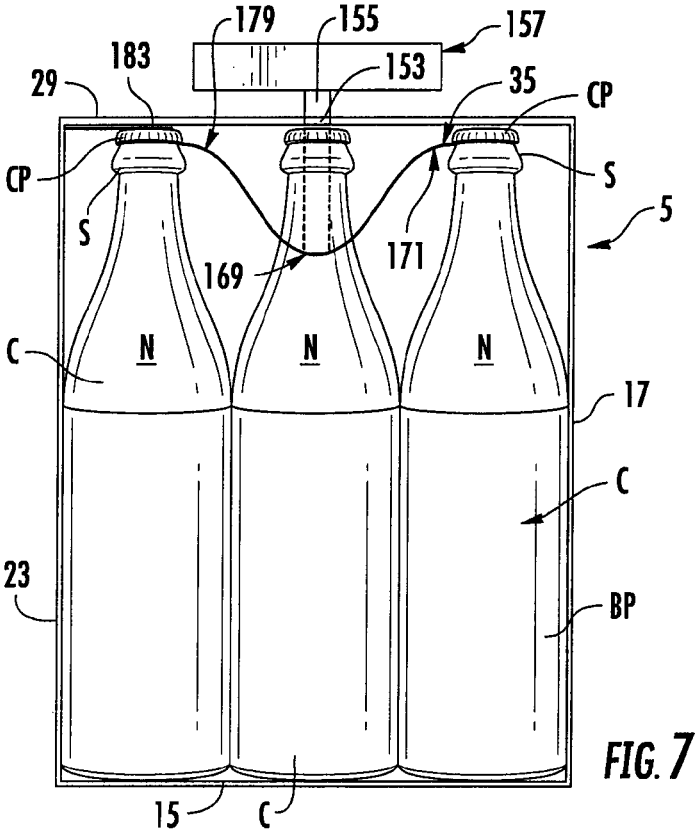
179
155
157
183
153
29
35
CP
CP
S
S
5
169
171
C
N
N
N
17
C
23
BP
15
C

FIG. 7

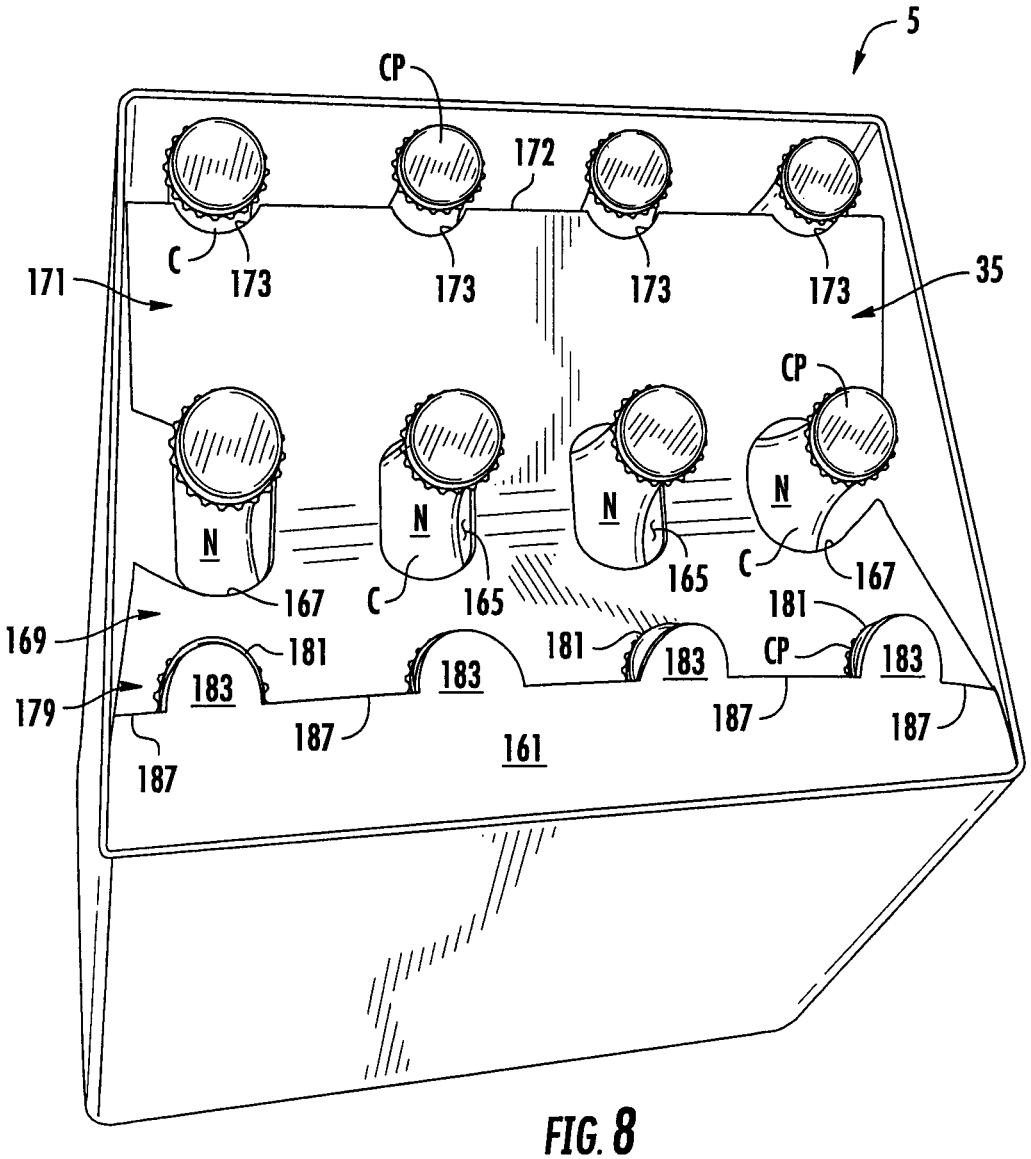

FIG. 8

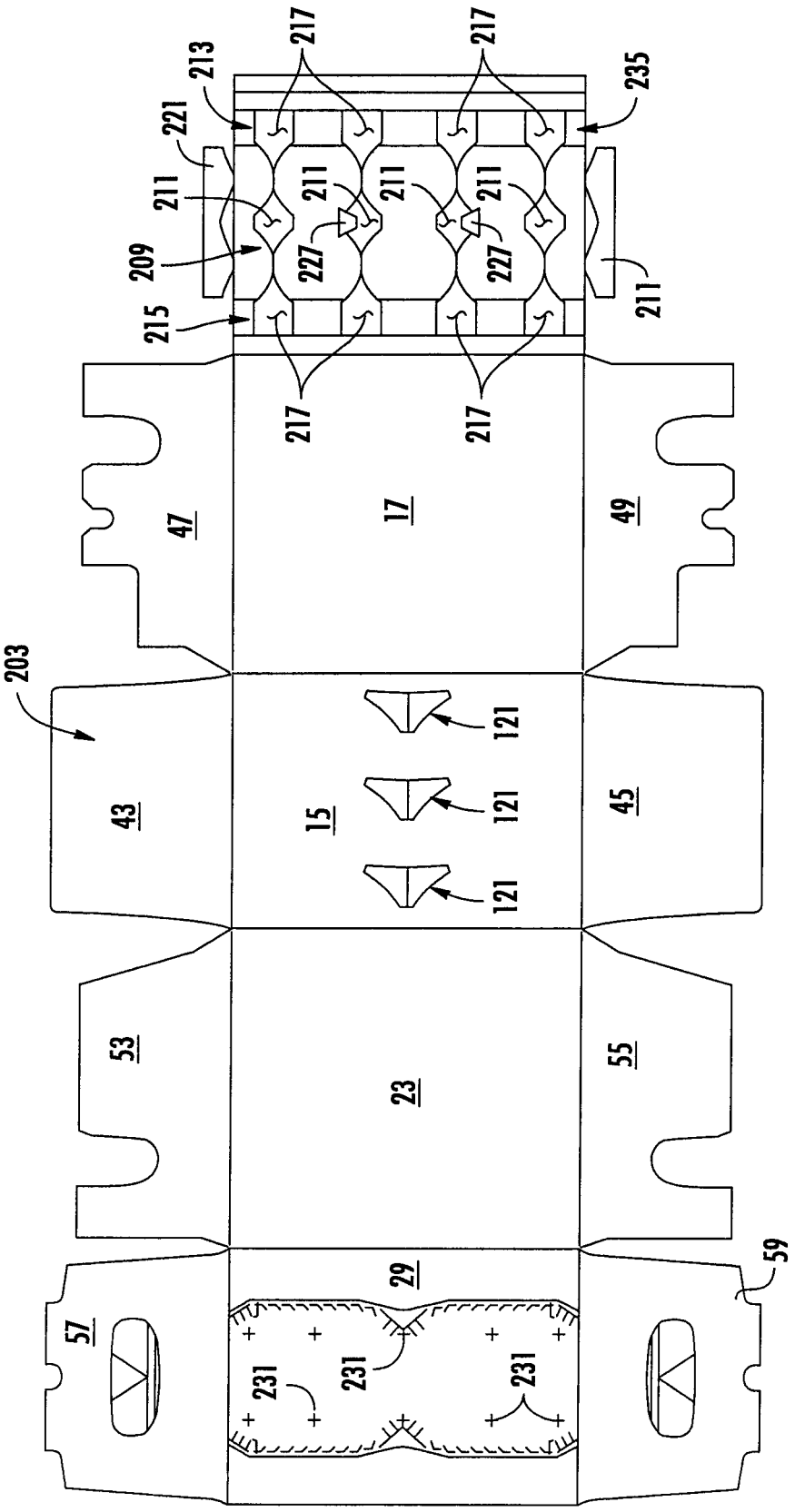
217
213
221
211
209
215
227
235
17
47
49
203
43
15
45
121
53
23
55
29
59
57
231

FIG. 9

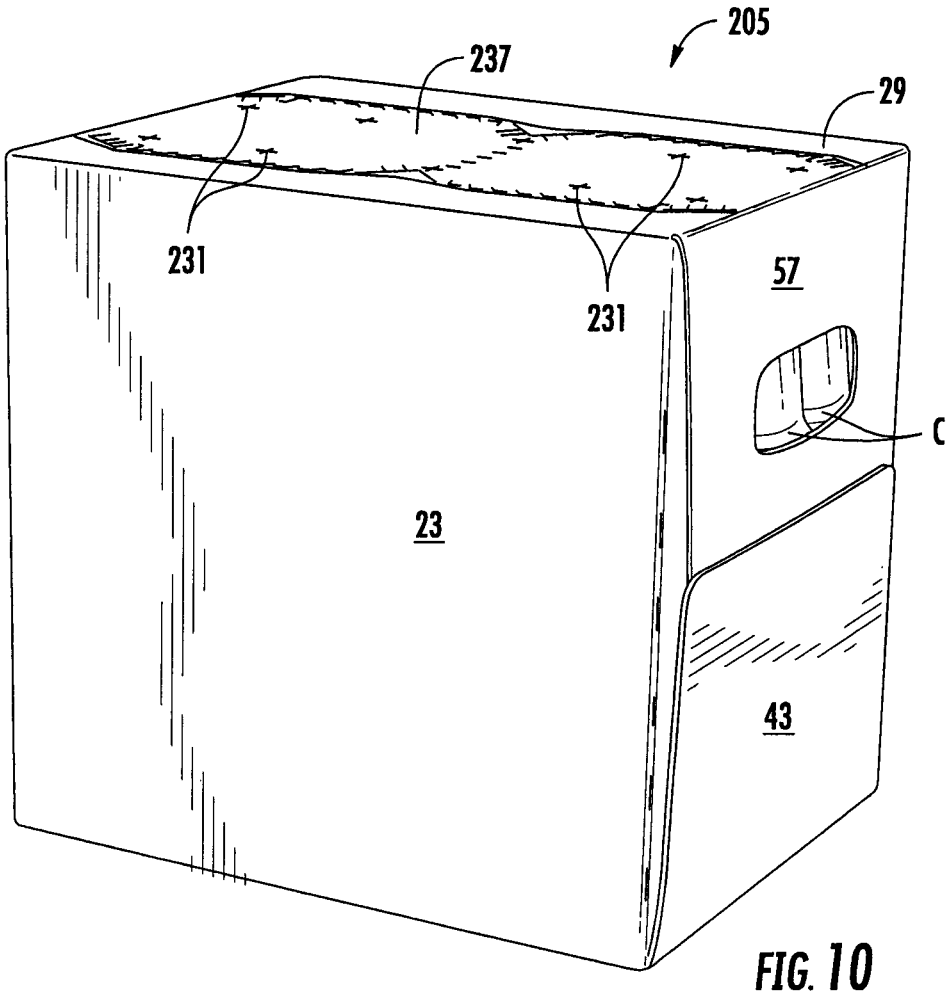

FIG. 10

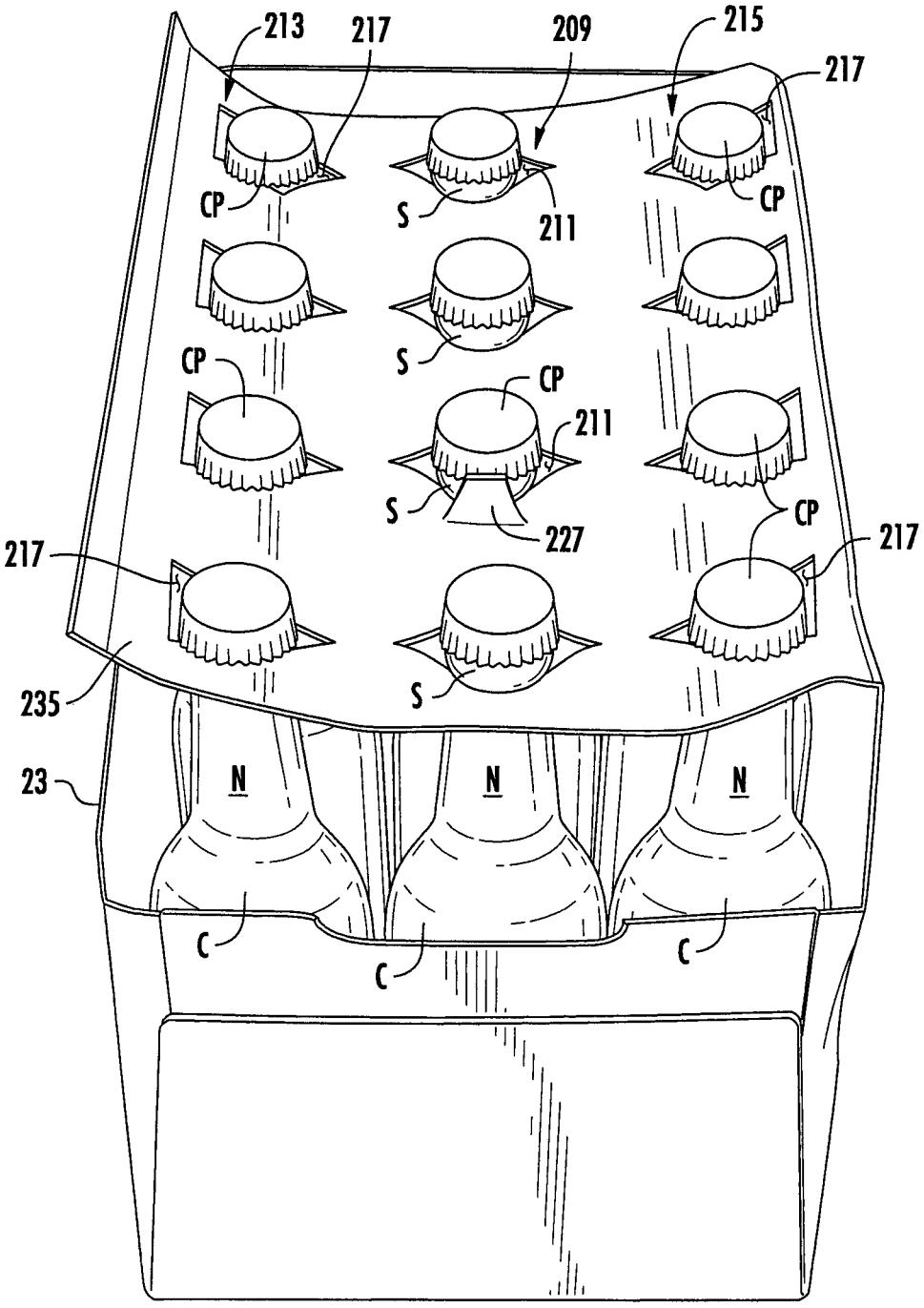
213
217
209
215
217
CP
S
211
CP
CP
S
CP
CP
211
S
227
CP
217
217
235
S
23
N
N
N
C
C
C

FIG. 11

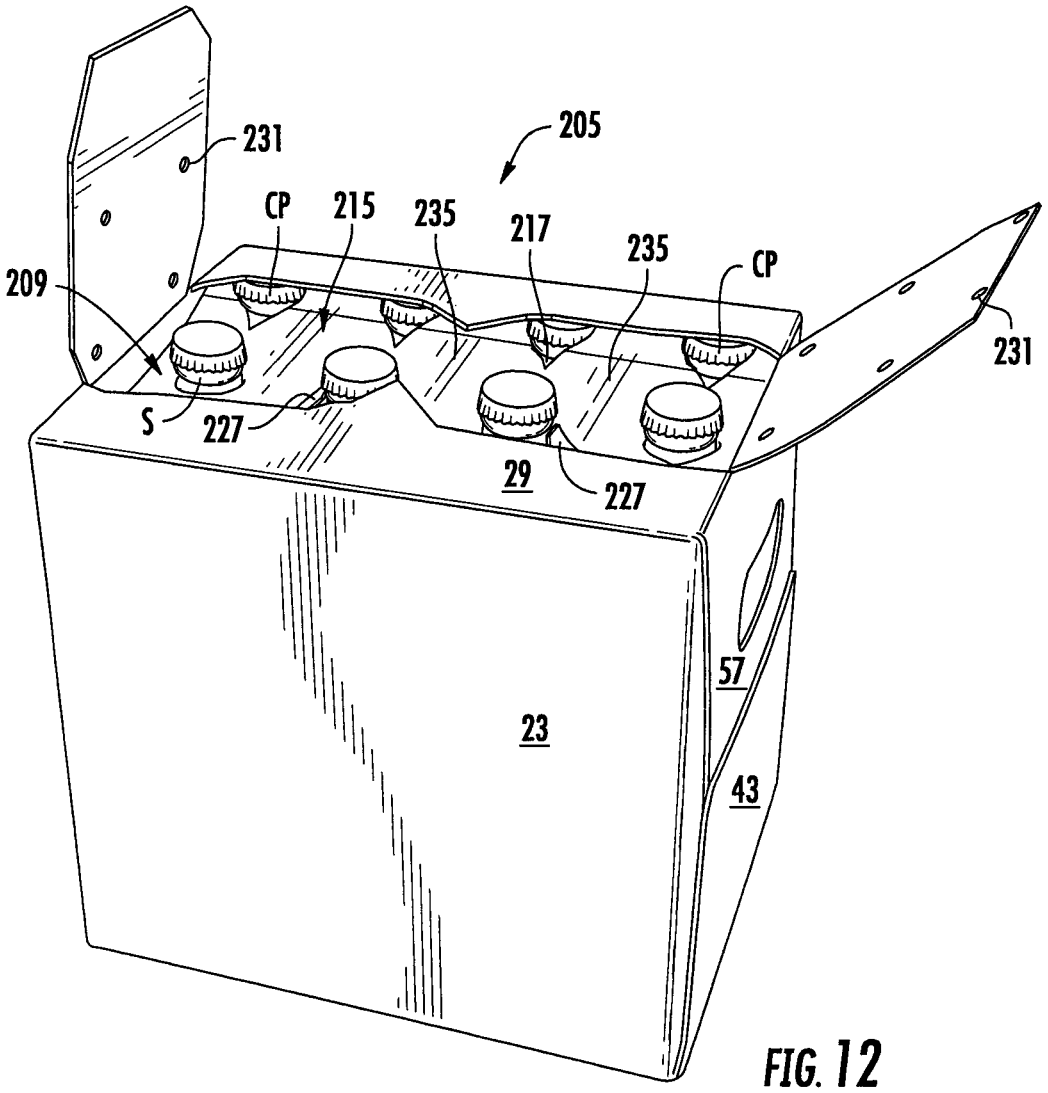

FIG. 12

CARTON WITH ARTICLE PROTECTION FLAP

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Patent Application No. 61/741,315, filed Jul. 17, 2012. This application is related to U.S. patent application Ser. No. 13/419,740, filed Mar. 14, 2012, which claims the benefit of U.S. Provisional Application No. 61/518,504, filed May 6, 2011, U.S. Provisional Application No. 61/572,638, filed Jul. 19, 2011, U.S. Provisional Application No. 61/272,249, filed Oct. 7, 2011, U.S. Provisional Application No. 61/548,779, filed Oct. 19, 2011, and U.S. Provisional Application No. 61/570,044, filed Dec. 13, 2011.

INCORPORATION BY REFERENCE

The entire contents of U.S. Provisional Patent Application No. 61/741,315, filed Jul. 17, 2012, U.S. patent application Ser. No. 13/419,740, filed Mar. 14, 2012, U.S. Provisional Application No. 61/518,504, filed May 6, 2011, U.S. Provisional Application No. 61/572,638, filed Jul. 19, 2011, U.S. Provisional Application No. 61/272,249, filed Oct. 7, 2011, U.S. Provisional Application No. 61/548,779, filed Oct. 19, 2011, and U.S. Provisional Application No. 61/570,044, filed Dec. 13, 2011, are hereby incorporated by reference as if presented herein in their entirety.

BACKGROUND OF THE DISCLOSURE

The present disclosure generally relates to cartons for holding beverage containers or other types of articles. More specifically, the present disclosure relates to cartons having an article protection flap and access features for positioning the article protection flap.

SUMMARY OF THE DISCLOSURE

In general, one aspect of the disclosure is generally directed to a carton for containing at least one article. The carton comprises a plurality of panels at least partially forming an interior of the carton. The plurality of panels comprises a top panel. The carton comprises an article protection flap foldably connected to at least one panel of the plurality of panels. The article protection flap is moveable between a first position that is substantially parallel to the top panel and a second position wherein the article protection flap is folded relative to the top panel. The at least one access feature in the top panel is for positioning the article protection flap from the first position to the second position.

In another aspect, the disclosure is generally directed to a blank for forming a carton for containing at least one article. The blank comprises a plurality of panels for at least partially forming an interior of the carton. The plurality of panels comprising a top panel. An article protection flap is foldably connected to at least one panel of the plurality of panels. The article protection flap is for being moveable between a first position that is substantially parallel to the top panel and a second position wherein the article protection flap is folded relative to the top panel in the carton formed from the blank. At least one access feature is in the top panel for positioning the article protection flap from the first position to the second position in the carton formed from the blank

In another aspect, the disclosure is generally directed to a method of forming a carton. The method comprising obtaining a blank comprising a plurality of panels comprising a top panel, and an article protection flap foldably connected to at least one panel of the plurality of panels. The top panel comprises at least one access feature. The method comprises positioning the plurality of panels to at least partially form an interior of the carton and loading at least one article in the interior of the carton. The method comprises accessing the article protection flap through the access feature and positioning the at least one article protection flap relative to the top panel after the loading the at least one article. The positioning comprises moving the article protection flap from a first position that is substantially parallel to the top panel to a second position wherein the article protection flap is folded relative to the top panel.

Other aspects, features, and details of the present disclosure can be more completely understood by reference to the following detailed description of exemplary embodiments taken in conjunction with the drawings and from the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Those skilled in the art will appreciate the above stated advantages and other advantages and benefits of various additional embodiments reading the following detailed description of the embodiments with reference to the below-listed drawing figures. Further, the various features of the drawings discussed below are not necessarily drawn to scale. Dimensions of various features and elements in the drawings may be expanded or reduced to more clearly illustrate the embodiments of the disclosure.

FIG. **1** is a plan view of an exterior surface of a blank according to a first exemplary embodiment of the disclosure.

FIG. **2** is a perspective view of a partially assembled carton according to the exemplary embodiment of the disclosure.

FIG. **3** is a perspective view of a partially assembled carton of FIG. **2** with articles loaded.

FIG. **4** is a side perspective view of the assembled carton.

FIG. **5** is a bottom perspective view of the assembled carton.

FIG. **6** is a side schematic view of the carton with a carton forming machine positioning an article protection flap.

FIG. **7** is an end schematic view of the carton of FIG. **6**.

FIG. **8** is a top perspective of the assembled carton with a top panel removed to show the interior of the carton and the article protection flap.

FIG. **9** is a plan view of an exterior surface of a blank according to a second exemplary embodiment of the disclosure.

FIG. **10** is a perspective view of the assembled carton of the second embodiment.

FIG. **11** is a top perspective view of the carton of FIG. **10** with the top panel removed to show the interior of the carton and the article protection flap.

FIG. **12** is a perspective view of the carton of FIG. **10** in an opened configuration.

Corresponding parts are designated by corresponding reference numbers throughout the drawings.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

The present disclosure generally relates to protection, opening, dispensing, and handling features for cartons that contain articles such as containers, bottles, cans, etc. The articles can be used for packaging food and beverage products, for example. The articles can be made from materials

suitable in composition for packaging the particular food or beverage item, and the materials include, but are not limited to, glass; aluminum and/or other metals; plastics such as PET, LDPE, LLDPE, HDPE, PP, PS, PVC, EVOH, and Nylon; and the like, or any combination thereof.

Some of the various features disclosed may be similar to any of the embodiments disclosed in the above-noted incorporated by reference patent applications, including U.S. patent application Ser. No. 13/419,740 and all related applications. Further, some of the various features disclosed herein may be combined with features disclosed in the '740 application to restrain movement of the containers in the carton.

Cartons according to the present disclosure can accommodate articles of any shape. For the purpose of illustration and not for the purpose of limiting the scope of the disclosure, the following detailed description describes beverage containers (e.g., glass beverage bottles) as disposed within the carton embodiments. In this specification, the terms "lower," "bottom," "upper" and "top" indicate orientations determined in relation to fully erected and upright cartons.

FIG. **1** is a plan view of the exterior side **1** of a blank, generally indicated at **3**, used to form a carton **5** (FIG. **4**) according to a first exemplary embodiment of the disclosure. The carton **5** can be used to house a plurality of articles such as containers C (FIG. **3**). In the illustrated embodiment, the containers C are bottles having a wide bottom portion BP, an upper portion or neck N extending upwardly from the bottom portion BP, a cap CP at the top of each container C, and a shoulder S just below the cap. In the illustrated embodiment, the carton **5** is sized to house twelve containers C in a single layer in a 3×4 arrangement, but it is understood that the carton **5** may be sized and shaped to hold containers C of a different or same quantity in more than one layer and/or in different row/column arrangements (e.g., 1×6, 3×6, 2×6, 2×6×2, 3×4×2, 2×9, 4×3, etc.). The containers C could be otherwise shaped, arranged, and/or configured without departing from the disclosure. For example, the containers C could be beverage cans or other containers. In the illustrated embodiment, the carton **5** includes a handle, generally indicated at **11** (FIGS. **4** and **5**), for grasping and carrying the carton.

The blank **3** has a longitudinal axis L**1** and a lateral axis L**2**. In the illustrated embodiment, the blank **3** comprises a bottom panel **15** foldably connected to a first side panel **17** at a first lateral fold line **19**, a second side panel **23** foldably connected to the bottom panel **15** at a second lateral fold line **25**, and a top panel **29** foldably connected to the second side panel **23** at a third lateral fold line **31**. An article protection flap **35** is foldably connected to the first side panel **17** at a fourth lateral fold line **37**. The article protection flap **35** could be foldably connected to one or more other panels (e.g., the top panel **29**) without departing from the disclosure.

The bottom panel **15** is foldably connected to a first bottom end flap **43** and a second bottom end flap **45**. The first side panel **17** is foldably connected to a first side end flap **47** and a second side end flap **49**. The second side panel **23** is foldably connected to a first side end flap **53** and a second side end flap **55**. The top panel **29** is foldably connected to a first top end flap **57** and a second top end flap **59**. When the carton **5** is erected, the end flaps **43**, **47**, **53**, **57** close a first end **72** of the carton, and the end flaps **45**, **49**, **55**, **59** close a second end **74** of the carton. In accordance with an alternative embodiment of the present disclosure, different flap arrangements can be used for closing the ends of the carton **5**.

The end flaps **43**, **47**, **53**, **57** extend along a first marginal area of the blank **3**, and are foldably connected at a first longitudinal fold line **67** that extends along the length of the blank. The end flaps **45**, **49**, **55**, **59** extend along a second marginal area of the blank **3**, and are foldably connected at a second longitudinal fold line **69** that also extends along the length of the blank. The longitudinal fold lines **67**, **69** may be, for example, substantially straight, or offset at one or more locations to account for blank thickness or for other factors without departing from the scope of the disclosure.

As shown in FIG. **1**, the blank **3** has handle features for forming a handle **11** at each end **72**, **74** of the carton **5**. The handle features include handle flaps **95** foldably connected to a respective top end flap **57**, **59**, and notches or openings **97** in the side end flaps **53**, **55**, **47**, **49**. The openings **97** cooperate to provide an opening at a respective closed end **72**, **74** to allow a respective handle flap **95** to be inwardly folded so that the carton **5** can be grasped at a respective end. The blank **3** can have other features for forming the handle **11**, or the blank and/or carton can have a handle that is alternatively shaped, arranged, and/or configured without departing from the disclosure. Further, the handle **11** can be omitted without departing from the disclosure.

In one embodiment, the blank **3** has features for forming article protection features in the ends **72**, **74** of the carton **5**. As shown in FIG. **1**, the side end flaps **47**, **49**, **53**, **55** have deformations in the form of indentations **105** on the exterior surface **1** of the blank **3** such that the indentations form a protrusion on the interior surface of the blank. The bottom end flaps **43**, **45** each have two rows of deformations in the form of indentations **107** on the interior surface of the blank **3** such that the indentations on the interior surface form a protrusion on the exterior surface **1** of the blank **103**. As shown in FIG. **1**, the top end flaps **57**, **59** each have a respective distal edge **111** having corner notches **113** and a center notch **115**. The indentations **105**, **107** can be any deformation on a surface of a respective side end flaps **47**, **49**, **53**, **55** or bottom end flap **43**, **45** such that the deformation can be any suitable shape (e.g., a concave depression or protrusion, convex depression or protrusion, flat depression or protrusion, embossed area, debossed area, etc., or any other suitable shape). Furthermore, the indentations **105**, **107** could be formed on the interior or exterior surface of one or more of the first side panel **17**, second side panel **23**, top panel **29**, bottom panel **15**, or top end flaps **57**, **59** without departing from the disclosure. The blank **3** can have other protection features that are alternatively shaped, arranged, and/or configured without departing from the disclosure. Further, the article protection features can be omitted without departing from the disclosure.

In the illustrated embodiment, the blank **3** includes three bottom article protection flaps **121** arranged in a 1×3 arrangement and foldably connected to the bottom panel **15**, but the blank **3** could have more or less than three bottom article protection flaps **121**, and the flaps **121** could be otherwise arranged in other suitable row/column arrangements or in a random configuration on the bottom panel **15**, including a multiple row or a multiple column configuration, or any other suitable configuration. The bottom article protection flaps **121** are each foldably connected to the bottom panel **15** at a respective lateral fold line **123** and are each at least partially defined by a line of weakening **125** in the bottom panel **15**. In one embodiment, the line of weakening **125** is a cut, but the line of weakening could comprises other forms of weakening (e.g., a tear line that comprises cut lines separated by breakable nicks, a tear line that is formed by a series of spaced apart cuts, etc.) that allows the bottom article protection flap **121** to separate from the bottom panel **15** without departing from the disclosure. In other embodiments, the blank **3** can include bottom article protection flaps **121** that are otherwise, shaped, arranged, and/or configured without departing from the dis-

closure. The bottom article protection flaps **121** could be omitted without departing from the disclosure.

In one embodiment, the blank **3** comprise a dispenser panel **131** in the top panel **29** for forming a dispenser **133** in the carton **5**. The dispenser panel **131** is formed by a dispenser pattern or tear line **135** that extends in the top panel **29**. In one embodiment, the dispenser panel **131** comprises a first portion **137** foldably connected to the top panel at a first longitudinal fold line **139** and a second portion **141** foldably connected to the top panel at a second longitudinal fold line **143**. The first portion **137** and the second portion **141** are separable along a portion of the tear line **135** that is approximately in the middle of the top panel **29**. The dispenser panel **131** could be otherwise shaped, arranged, and/or configured without departing from the disclosure. Further, the dispenser **133** and the dispenser panel **131** could be omitted without departing from the disclosure.

As shown in FIG. **1**, the top panel **29** includes three access features **151** in the form of access flaps foldably connected to the top panel. The access flaps **151** are foldable to create an access opening **153** (FIGS. **6** and **7**) in the top panel **29** for receiving a respective actuator or finger **155** of a carton forming machine **157** (partially shown in FIGS. **6** and **7**). In one embodiment, the access features **151** are arranged in a single row on approximately the centerline of the top panel **29**. Also, the access features **151** are provided in the dispenser panel **131**. The access features **151** could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

As shown in FIG. **1**, the article protection flap **35** can include a base portion **161** foldably connected to the first side panel **17** at the fold line **37** and an article retention portion **163**. The article retention portion **163** includes features for engaging the articles C that include two central openings **165** and two notches **167** in a middle portion **169** of the article protection flap. The article protection flap **35** includes a distal (broadly "first outer portion") **171** that has four notches **173** at a distal edge **172** of the article protection flap. The article protection flap **35** includes an article engaging portion **179** (broadly "second outer portion") adjacent the base portion **161** that includes article retention flaps **181** for engaging a portion of a respective article C. The base portion **161** includes four tabs **183** that contact the cap CP of a respective article of the row of articles that is adjacent the side panel **17**. The retention flaps **181** of the article engaging portion **179** of the article retention flap **35** engage the underside of the cap CP or the shoulder S of a respective article of the row of articles that is adjacent the side panel **17**. In the illustrate embodiment, the middle portion **169** of the article protection flap **35** includes fold lines **185** extending from an opening **165** to a respective notch **167**. As shown in FIG. **1**, the article retention portion **163** is connected to the base portion **161** by fold lines **187** adjacent to respective tabs **183**. The article protection flap **35** could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

In accordance with one exemplary embodiment, the blank **3** can be erected into the carton **5** by folding blank about fold lines **31** and **37** and positioning the article protection flap **35** to be in face-to-face contact with the interior surface of the top panel **29**. The article protection flap can be secured to the top panel **29** by releasable adhesive such as glue or other suitable adhesive. Further, at various stages of the erecting process, glue or other adhesive can be applied to various portions of the blank **3**. After attaching the article protection flap **35** to the top panel **29**, the blank **3** can be formed into an open-ended sleeve **201** (FIG. **2**) by folding the bottom panel **15**, side panels **17**, **23**, and top panel **29** along respective fold lines **19**, **25**, **31**, **37**. Containers C can be loaded into an interior space **203** of the sleeve **201**. One of the ends **72**, **74** can be closed prior to loading the containers C or both of the ends can be closed after loading the containers into the interior space **203**.

After closing the ends **72**, **74** (or alternatively, prior to closing the ends), the article protection flap **35** can be positioned to engage the articles C. As shown in FIGS. **6** and **7**, a carton forming machine **157** having fingers or actuators **155** can be used to position the article protection flap **35** on the articles C. The actuators **155** of the carton forming machine **157** are inserted through the access features **151** in the top panel **29** to contact the article protection flap **35**. In one embodiment, the carton forming machine **157** has three actuators **155** for contacting the middle portion **169** of the article protection flap **35**, but the carton forming machine could have more or less than three actuators and could have actuators for contacting the two outer portions **171**, **179** of the article protection flap **35**. In the illustrated embodiment, the actuators **155** press down on the middle portion **169** of the article protection flap by way of the access openings **153** created in the top panel **29**. When the article protection flap **35** is contacted by the actuators, the article protection flap breaks the adhesive bond with the top panel **29** and separates from the top panel such that the middle portion extends downwardly from the two outer portions **171**, **179**. The openings **165** and notches **167** receive a portion of a respective article in the middle row of articles. In one embodiment, the notches **173** in the distal portion **171** of the article protection flap **35** engage an underside of the caps CP of the row of articles C adjacent the second side panel **23**, the article retention flaps **181** engage the underside of the caps CP of the row or articles adjacent the first side panel **17** and the tabs **183** contact the tops of the caps of the row of articles adjacent the first side panel **17**. Alternatively, one or more of the notches **173** and article retention flaps **181** could engage an underside of the shoulder S of the respective articles in the carton, or one or more features could engage the neck N of the respective articles in the carton. The article protection flap **35** is positioned to engage a top portion of the articles C in the carton **5** to prevent or reduce the movement of the articles in the carton and to prevent or reduce breakage of the articles. The article protection flap **35** could be otherwise positioned in the carton **5** without departing from the disclosure.

In one embodiment, the loaded and closed carton **5** is further processed so that the bottom article protection flaps **121** are activated to provide a cushion between the bottom portion BP of the containers C inside the carton and further secure the containers to prevent breaking. The bottom article protection flaps **121** are foldably connected to the bottom panel **15** and moveable between a first position (that is substantially parallel to the bottom panel) and a second position wherein the bottom article protection flaps are folded upwardly relative to the bottom panel. In one embodiment, the bottom article protection flaps **121** are raised or activated and the bottom article protection flaps have features for preventing the folding of the article protection flaps from the second position back to the first position. It is understood that the bottom article protection flaps **121** will be activated to the second position (FIG. **5**) after the ends **72**, **74** of the carton **105** have been closed. Alternatively, the bottom article protection flaps **121** could be activated prior to closing one or both of the ends **72**, **74** of the carton **5** without departing from the disclosure. In one embodiment, the bottom article protection flaps **121** are in contact with the bottom portion BP of the containers C, and the article protection flap **35** is in contact with the top portion (e.g., neck N, cap CP, or shoulder S) to

prevent or reduce the movement of the articles C in the carton **5** and to prevent or reduce breakage of the articles.

FIGS. **9-12** illustrate various features of a blank **203** for forming a carton **205** of second embodiment having similar features as the first embodiment of the disclosure. Accordingly, similar or identical features of the embodiments are provided with like reference numbers. In the embodiment of FIGS. **9-12**, the article protection flap **235** has a middle portion **209** comprising four openings **211** and two outer portions **213**, **215** comprising four openings **217**. The middle portion **209** includes two reinforcement flaps **221** at respective ends of the article retention flap for reinforcing the middle portion. The two interior openings **211** in the middle portion each comprise a respective article retention flap **227** adjacent a respective opening. The article protection flap **235** could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

As shown in FIG. **9**, the top panel **29** includes twelve access openings **231** in the form of cuts in the top panel. The openings **231** are arranged in two rows of six cuts, but the openings could be otherwise shaped, arranged, and/or configured without departing from the disclosure. In the illustrated embodiment, the cuts **231** are located in the dispenser panel **237**, but the cuts could be otherwise shaped, arranged, configured, and/or positioned without department from the disclosure.

As shown in FIGS. **11** and **12**, the article protection flap **235** can be positioned by the carton forming machine **157** to retain the articles C in a similar manner as the article retention flap **35** of the first embodiment. In one embodiment, the middle portion **209** of the article protection flap **235** can be pushed below the shoulders S of the articles C so that the shoulders engage the article retention flap adjacent the openings **211** in the middle portion. The article retention flaps **227** can be upwardly folded to engage the underside of a respective cap CP of a respective article C. The outer portions **213**, **215** of the article protection flap **235** can be positioned so that the caps CP of respective articles in the two outer rows of articles engage the article protection flap adjacent respective openings **217** in the outer portions. Alternatively, one or both of the outer portions **213**, **215** can be pressed downward so that the shoulders S of the two outer rows of articles engage the article protection flap **235** adjacent respective openings **217**. The article protection flap **235** could be otherwise shaped, arranged, and/or configured without departing form the disclosure.

In general, the blank may be constructed from paperboard having a caliper so that it is heavier and more rigid than ordinary paper. The blank can also be constructed of other materials, such as cardboard, or any other material having properties suitable for enabling the carton to function at least generally as described above. The blank can be coated with, for example, a clay coating. The clay coating may then be printed over with product, advertising, and other information or images. The blank may then be coated with a varnish to protect information printed on the blanks. The blank may also be coated with, for example, a moisture barrier layer, on either or both sides of the blanks. The blank can also be laminated to or coated with one or more sheet-like materials at selected panels or panel sections.

As an example, a tear line can include: a slit that extends partially into the material along the desired line of weakness, and/or a series of spaced apart slits that extend partially into and/or completely through the material along the desired line of weakness, or various combinations of these features. As a more specific example, one type tear line is in the form of a series of spaced apart slits that extend completely through the material, with adjacent slits being spaced apart slightly so that a nick (e.g., a small somewhat bridging-like piece of the material) is defined between the adjacent slits for typically temporarily connecting the material across the tear line. The nicks are broken during tearing along the tear line. The nicks typically are a relatively small percentage of the tear line, and alternatively the nicks can be omitted from or torn in a tear line such that the tear line is a continuous cut line. That is, it is within the scope of the present disclosure for each of the tear lines to be replaced with a continuous slit, or the like. For example, a cut line can be a continuous slit or could be wider than a slit without departing from the present disclosure.

In accordance with the exemplary embodiments, a fold line can be any substantially linear, although not necessarily straight, form of weakening that facilitates folding therealong. More specifically, but not for the purpose of narrowing the scope of the present disclosure, fold lines include: a score line, such as lines formed with a blunt scoring knife, or the like, which creates a crushed or depressed portion in the material along the desired line of weakness; a cut that extends partially into a material along the desired line of weakness, and/or a series of cuts that extend partially into and/or completely through the material along the desired line of weakness; and various combinations of these features. In situations where cutting is used to create a fold line, typically the cutting will not be overly extensive in a manner that might cause a reasonable user to incorrectly consider the fold line to be a tear line.

The above embodiments may be described as having one or more panels adhered together by glue during erection of the carton embodiments. The term "glue" is intended to encompass all manner of adhesives commonly used to secure carton panels in place.

The foregoing description of the disclosure illustrates and describes various exemplary embodiments. Various additions, modifications, changes, etc., could be made to the exemplary embodiments without departing from the spirit and scope of the disclosure. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. Additionally, the disclosure shows and describes only selected embodiments of the disclosure, but the disclosure is capable of use in various other combinations, modifications, and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or within the skill or knowledge of the relevant art. Furthermore, certain features and characteristics of each embodiment may be selectively interchanged and applied to other illustrated and non-illustrated embodiments of the disclosure.

What is claimed is:

1. A carton for containing a plurality of articles, the carton comprising

a plurality of panels at least partially forming an interior of the carton, the plurality of panels comprising a top panel;

an article protection flap foldably connected to at least one panel of the plurality of panels, the article protection flap is moveable between a first position that is substantially parallel to the top panel and a second position wherein the article protection flap is folded relative to the top panel; and

at least one access feature in the top panel for positioning the article protection flap from the first position to the second position, the article protection flap comprises a base portion foldably connected to a panel of the plurality of panels and an article retention portion foldably connected to the base portion, the article retention portion comprises a plurality of features for engaging a

respective article of the plurality of articles, the article protection flap has a middle portion extending downwardly from two outer portions, the middle portion comprises at least one of the plurality of features comprising an opening for engaging an article of the plurality of articles.

2. The carton of claim **1**, wherein the plurality of features comprise a plurality of openings in the article retention portion for engaging a respective article of the plurality of articles.

3. The carton of claim **2**, wherein the plurality of features comprises retention flaps for engaging a respective article of the plurality of articles.

4. The carton of claim **2**, wherein the plurality of articles comprises containers having a cap and a shoulder, at least one of the plurality of features being in contact with one of the cap and the shoulder.

5. The carton of claim **4**, wherein the article retention features in the middle portion contact a portion of the articles below the shoulder, article retention features in the two outer portions contact the cap of the articles to restrain movement of the containers in the carton.

6. The carton of claim **4**, wherein the article retention features in the middle portion contact the shoulder and the article retention features in the outer portions contact the cap of the plurality of containers.

7. The carton of claim **2**, wherein the at least one of the plurality of features comprises notches in a free edge of at least one of the two outer portions of the article protection flap.

8. The carton of claim **1**, wherein the base portion comprises at least one tab for engaging a top of the at least one article.

9. The carton of claim **8**, wherein the article retention portion comprises retention flaps adjacent the at least one tab for engaging a portion of the at least one article.

10. The carton of claim **1**, wherein the access feature comprises a plurality of access flaps foldably connected to the top panel, the plurality of access flaps are foldable to create a respective access opening in the top panel.

11. The carton of claim **1**, wherein the plurality of panels comprises a bottom panel, the article protection flap is a top article protection flap, and the carton further comprising at least one bottom article protection flap foldably connected to the bottom panel, the bottom article protection flap is moveable between a first position that is substantially parallel to the bottom panel and a second position wherein the bottom article protection flap is folded relative to the bottom panel, the bottom article protection flap has features for preventing folding of the article protection flap from the second position to the first position.

12. The carton of claim **11**, wherein the bottom article protection flap is for contact with a bottom portion of the at least one article and the top article protection flap is for contact with a top portion of the at least one article.

13. The carton of claim **1**, wherein the article protection flap comprises a first free edge, a second free edge, and a third free edge, each of the first free edge, the second free edge and third free edge comprise at least one notch.

14. The carton of claim **1**, wherein the two outer portions are a first outer portion and a second outer portion, the middle portion is foldably connected to the first outer portion at a first fold line and foldably connected to the second outer portion at a second fold line, and the first outer portion is foldably connected to the base portion at least partially along a third fold line.

15. A blank for forming a carton for containing a plurality of articles, the blank comprising:

a plurality of panels for at least partially forming an interior of the carton, the plurality of panels comprising a top panel;

an article protection flap foldably connected to at least one panel of the plurality of panels, the article protection flap is for being moveable between a first position that is substantially parallel to the top panel and a second position wherein the article protection flap is folded relative to the top panel in the carton formed from the blank; and

at least one access feature in the top panel for positioning the article protection flap from the first position to the second position in the carton formed from the blank, and

the article protection flap comprises a base portion foldably connected to a panel of the plurality of panels and an article retention portion foldably connected to the base portion, the article retention portion comprises a plurality of features for engaging a respective article of the plurality of articles, the article protection flap has a middle portion that is for extending downwardly from two outer portions in the carton formed from the blank, the middle portion comprises at least one of the plurality of features comprising an opening for engaging an article of the plurality of articles in the carton formed from the blank.

16. The blank of claim **15**, wherein the plurality of features comprises a plurality of openings in the article retention portion for engaging a respective article of the plurality of articles.

17. The blank of claim **16**, wherein the plurality of features comprises retention flaps for engaging a respective article of the plurality of articles.

18. The blank of claim **16**, wherein the at least one of the plurality of features comprises notches in a free edge of the article protection flap in at least one of the outer portions.

19. The blank of claim **15**, wherein the base portion comprises at least one tab for engaging a top of the at least one article, and the retention portion comprises retention flaps adjacent the at least one tab for engaging a portion of the at least one article.

20. The blank of claim **15**, wherein the access feature comprises a plurality of access flaps foldably connected to the top panel, the plurality of access flaps are foldable to create a respective access opening in the top panel.

21. The blank of claim **15**, wherein the plurality of panels comprises a bottom panel, the article protection flap is a top article protection flap, and the carton further comprising at least one bottom article protection flap foldably connected to the bottom panel, the bottom article protection flap is moveable between a first position that is substantially parallel to the bottom panel and a second position wherein the bottom article protection flap is folded relative to the bottom panel in the carton formed from the blank, the bottom article protection flap has features for preventing folding of the article protection flap from the second position to the first position.

22. The blank of claim **21**, wherein the bottom article protection flap is for contact with a bottom portion of the at least one article and the top article protection flap is for contact with a top portion of the at least one article in the carton formed from the blank.

23. A method of forming a carton, the method comprising:

obtaining a blank comprising a plurality of panels comprising a top panel, an article protection flap foldably connected to at least one panel of the plurality of panels, and the top panel comprises at least one access feature, the article protection flap comprises a base portion foldably

connected to a panel of the plurality of panels and an article retention portion foldably connected to the base portion, the article retention portion comprises a plurality of features for engaging a respective article of the plurality of articles, the article protection flap has a middle portion and two outer portions, the middle portion comprises at least one of the plurality of features comprising an opening for engaging an article of the plurality of articles;

positioning the plurality of panels to at least partially form an interior of the carton;

loading a plurality of articles in the interior of the carton;

accessing the article protection flap through the access feature and positioning the at least one article protection flap relative to the top panel after the loading plurality of articles, the positioning comprises moving the article protection flap from a first position that is substantially parallel to the top panel to a second position wherein the article protection flap is folded relative to the top panel, the positioning comprises positioning the middle portion to extend downwardly from the two outer portions and placing the opening in the middle portion in engagement with an article of the plurality of articles.

24. The method of claim **23**, wherein the engaging comprises operating a carton forming machine having at least one actuator, the at least one actuator being inserted through the access feature and contacting the article retention portion to position the article retention portion in contact with at least one article of the plurality of articles.

25. The method of claim **24**, wherein the base portion comprises at least one tab and the positioning comprises contacting the at least one tab with a top of the at least one article.

26. The method of claim **25**, wherein the retention portion comprises retention flaps adjacent the at least one tab and the positioning comprises contacting the retention flaps with a portion of the at least one article.

27. The method of claim **24**, wherein the access feature comprises a plurality of access flaps foldably connected to the top panel, the engaging comprises folding the plurality of flaps to create a respective access opening in the top panel and inserting a respective finger of the carton forming machine through a respective opening.

28. The method of claim **24**, wherein the at least one feature is a plurality of features, the plurality of features comprise a plurality of openings in the article retention portion, the engaging comprises inserting a respective one of the articles through a respective one of the openings.

29. The method of claim **28**, wherein the plurality of features comprises retention flaps and the engaging comprises contacting the retention flaps with a respective article of the plurality of articles.

30. The method of claim **28**, wherein the plurality of articles comprises containers having a cap and a shoulder.

31. The method of claim **30**, wherein the openings are in the middle portion and the middle portion contacts a portion of the articles below the shoulder, the two outer portions have article retention features that contact the cap of the articles to restrain movement of the containers in the carton.

32. The method of claim **31**, wherein the article retention features comprise notches in a free edge of the article protection flap in at least one of the two outer portions.

33. The method of claim **28**, wherein the plurality of articles comprises containers having a cap and a shoulder, the article retention features in the middle portion contact the shoulder and the article retention features in the outer portions contact the cap of the plurality of containers.

34. The method of claim **33**, wherein the plurality of panels comprises a bottom panel, the article protection flap is a top article protection flap, and the carton further comprising at least one bottom article protection flap foldably connected to the bottom panel, the method comprises positioning the bottom article protection flap between a first position that is substantially parallel to the bottom panel and a second position wherein the bottom article protection flap is folded relative to the bottom panel, the bottom article protection flap has features for preventing folding of the article protection flap from the second position to the first position.

35. The method of claim **34**, wherein the positioning the bottom article protection flap comprises contacting the bottom article protection flap with a bottom portion of the at least one article and positioning the top article protection flap comprises contacting the top article protection flap with a top portion of the at least one article.

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